PT-B2

User's Manual

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Peripheral Technology

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PT- B2 Revision 1

The PT- B2 is a replacement board for the SWTPC MP-B2. It can be used with either a 6800 or 6809 processor board and offers additional features over the MB-B2 board. It can be configured by shunts for 4 or 16 addresses per IO slot, and the base address of the IO can be set by programming shunts. The address decoding is tighter. The SWTPC board decoded IO to a 4K block. While at the time this didn't seem to be a problem, but today it wastes the address space above the top of the IO block which only requires 32 bytes on the 6800 or 128 bytes for the 6809. While the PT-MB-B2R has tight decoding only requiring 128 bit of address space, a special memory board is required to take advantage of this space. Currently the PT-SS50-64K board is only able to make use of 3840 bytes of this space as it can only map out the lower 256 bytes in the IO block. The PT-B2 has baud rate generation circuitry on board, and jumpers can allow either a processor board or the PT-B2 to supply baud rates to the SS30 IO slots. This allows the PT-B2 to be used with 6809 CPU boards with extended addressing - that is address lines A16 to A19. The PT-B2 motherboard can be used in either 1 or 2 MHZ systems. The PT-B2 provides a connector for the 6800 reset switch. For 6809 systems, this connector should be left unconnected since the reset for a 6809 system connects to the processor board. The line used as a RESET for the 6800 serves another purpose in 6809 systems. The PT-B2 uses the same mounting hole positions and is the same size as the SWTPC MP-B and MP-B2 and is a direct drop in replacement.

Jumpers

JP1 - Select base address of SS30 slots.

Typically 80xx is selected for a 6800 system and E0xx is selected for a 6809 system

JP2,JP3 - 3 shunts - Select 4 or 16 addresses per IO slot.

Typically 4 addresses are used for 6800 systems and 16 for 6809 systems. To select 4 addresses per IO slot place 3 shunts toward the 4 on the silkscreen. Place the shunts toward 16 to select 16 addresses per slot.

JP4 - 5 Shunts - Baud rate from motherboard or processor board
Do not install JP4 shunts to use motherboard baud rate generator. The baud rates produced by the motherboard will be passed to the SS30 slots. If JP4 shunts are installed baud rates produced by processor board will be passed to the SS30 slots. If JP4 shunts are installed you must remove IC3 on the motherboard.

JP5 - Select 110 or 57600 baud. The selected baud rate is placed on the 110 baud line.

JP6 - Selects low or high baud rate option of MC14411.

JP7 - Normal or SLOW IO

Slow IO is only for 6809 processors. It is suggested that slow IO not be used since it has never been tested on the PT-B2. However the circuitry is the same as used by SWTPC. Its purpose is to allow slow IO boards to be used in systems with a 2MHZ processor.

JP8 - 2 Shunts - Installed for 16 addresses per IO slot

This jumper when installed will connect A2 and A3 to the UD3 and UD4 on the SS30 slots. For the 6800 the IO slots have UD3 and UD4. These are user defined lines and are used to allow floppy controller and IDE controllers to function. On the 6809 these lines become RS2 and RS3 to allow for 16 addresses per IO slot. When installed do not have jumpers installed in J9 or J10. Should you have both installed your system will not work.

JP9 - IO5 Select to UD3/RS3

This jumper is needed when using floppy controllers in slot 6 in 4 addresses per IO slot systems, usually 6800 systems. This jumper is needed because floppy controllers require more than 4 addresses to work. When this jumper is selected you cannot use a board in slot 5 since it's select is being used by the floppy controller in slot 6. On original SWTPC motherboards it was necessary to solder a wire on the motherboard to connect these two signals.

JP10 - IO3 Select to UD2/RS2

This jumper is needed to use a PT-SS30-IDE board on 6800 systems with 4 addresses per IO slot. The IDE board is installed in slot 2 and the select line for slot 3 is used because the IDE interface needs 8 addresses to work. When this jumper is installed you cannot install a board in slot 3.

Typical Jumper Configurations

Typical 6800 System

6800 with 4 addresses per IO slot. Base IO address is at 8000. This configuration assumes you will have a floppy and IDE controller installed.

JP6 - LOW
JP5 - 110
JP4 - All shunts are installed, IC8 is removed.
JP7 - NORMAL
JP8 - No shunts
JP9 - Shunt
JP10 - Shunt
JP2,JP3 - 3 shunts installed facing the 4 on the silkscreen
JP1 - Shunt at 80xx, no other shunts installed

Connect reset switch to the terminals labeled 6800 reset. JP7 is only for 6809 systems and must be in normal position. 6800 systems do not support the SLOW IO jumper.

Typical 6809 64K System

6809 system with 16 addresses per IO slot. Base IO address is E000. 64K system

JP6 - LOW
JP5 - 110
JP4 - All shunts are installed. IC8 is removed.
JP7 - NORMAL
JP8 - Two shunts installed.
JP9 - Not installed
JP10 - Not installed
JP2,JP3 - 3 shunts installed facing the 16 on the silkscreen.
JP1 - Shunt at E0xx. No other shunts installed.

The reset switch connector on the motherboard is not used with 6809 systems. This line has a different use for 6809 systems. The reset switch for 6809 systems connects to the processor board.

Typical 6809 1MB System

The jumpers are the same as the 6809 64K except there are no shunts installed in JP4, IC8, U9, and the rest of the baud rate circuitry parts must be installed. In this setup the motherboard supplies the baud rates to the SS30 slots.

Use of Onboard Baud Rate Generator

You may elect to use the motherboard generated baud rates for any system configuration, 6800 or 6809. Remove all shunts in JP4 and have the baud rate circuitry populated.

Baud Rate List

JP6 Jumper

Low	High
1200	4800
4800	19200
300	1200
9600	38400
110	1800

Note: If JP5 is set to 57600, low or high setting for 110 will produce 57600.

The position of the baud rates on the SS30 slots:

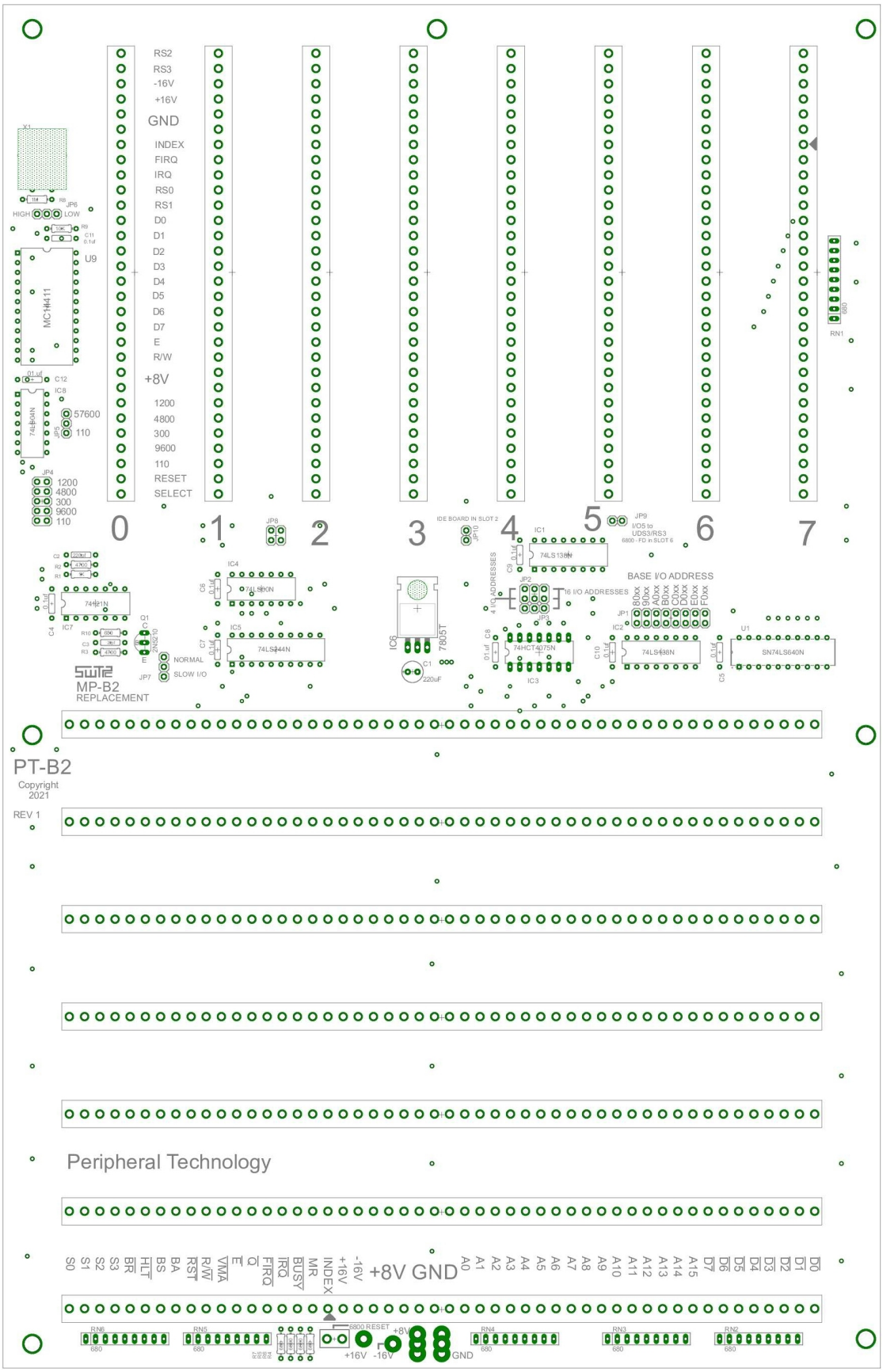
1200
4800
300
9600
110 or 57600
RESET
Select

The Select line is the one toward the middle of the board.

The SS30 line with these baud rates is marked on the silkscreen of the motherboard. The marking assumes JP6 is in the low setting.

Parts List PT-B2

Quantity	Designation	Description
1	R1	1K 1/4 Watt Resistor
2	R2,R3	4700 1/4 Watt Resistor
3	R4,R7,R10	680 1/4 Watt Resistor
2	R5,R6	6800 1/4 Watt Resistor
1	R8	1M 1/4 Watt Resistor
1	R9	10K 1/4 Watt Resistor
6	RN1-RN6	680 ohm 8 resistor 9 pin resistor SIP
1	C1	220uF 16 V Electrolytic Capacitor
1	C2	220pF
1	C3	20 or 22 PF
8	C4-C11	0.1 uf
1	U1	74LS640
1	IC1	74F138
1	IC2	74LS138
1	IC3	74HCT4075
1	IC4	74LS00
1	IC5	74LS244
1	IC6	7805
1	IC7	74121
1	IC8	74LS04
1	IC9	MC14411P
1	Q1	2N5210
1	IC6	Small heat sink for IC6
	IC6	Hardware, #4 screw,washer,nut
4		14 pin IC Socket
2		16 pin IC Socket
2		20 pin IC Socket
1		24 pin IC socket 0.6" width
1		8x2 male header
1		5x2 male header
1		2x2 male header
1		3x3 male header 1 2x3 and 1 1x3
3		3x1 male header
2		2x1 male header
4		Shorting Plugs as needed
60		10 pin Molex type connector - AMP TE Connectivity 1-640384-0
1		RESET connector for 6800 - cut 2 pins from 1-640384-0 connector
1		PT-B2 Board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RS3
-16V
+16V
GND
INDEX
FIRQ
IRQ
RS0
RS1
D0
D1
D2
D3
D4
D5
D6
D7
E
R/W
+8V
1200
4800
300
9600
110
RESET
SELECT
0
1
2
3
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5
6
7
MP-B2
REPLACEMENT
PT-B2
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REV 1
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S0 S1 S2 S3 BR HLT BS BA RST R/W VMA E Q FIRQ IRQ BUSY MR +16V -16V +8V GND
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15 D7 D6 D5 D4 D3 D2 D1 D0
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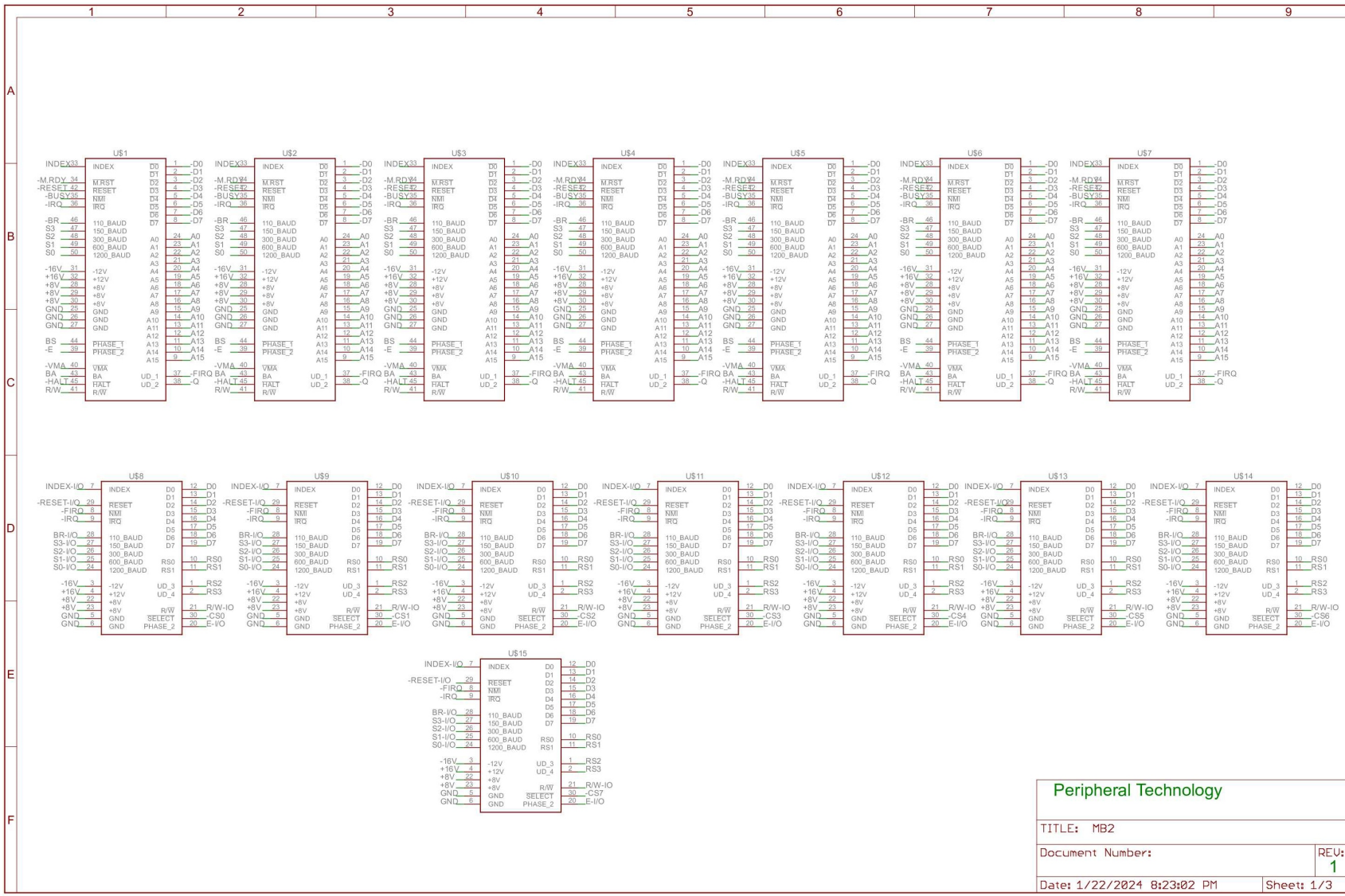
16 I/O ADDRESSES
NORMAL
SLOW I/O
RESET
+16V
-16V
+8V
GND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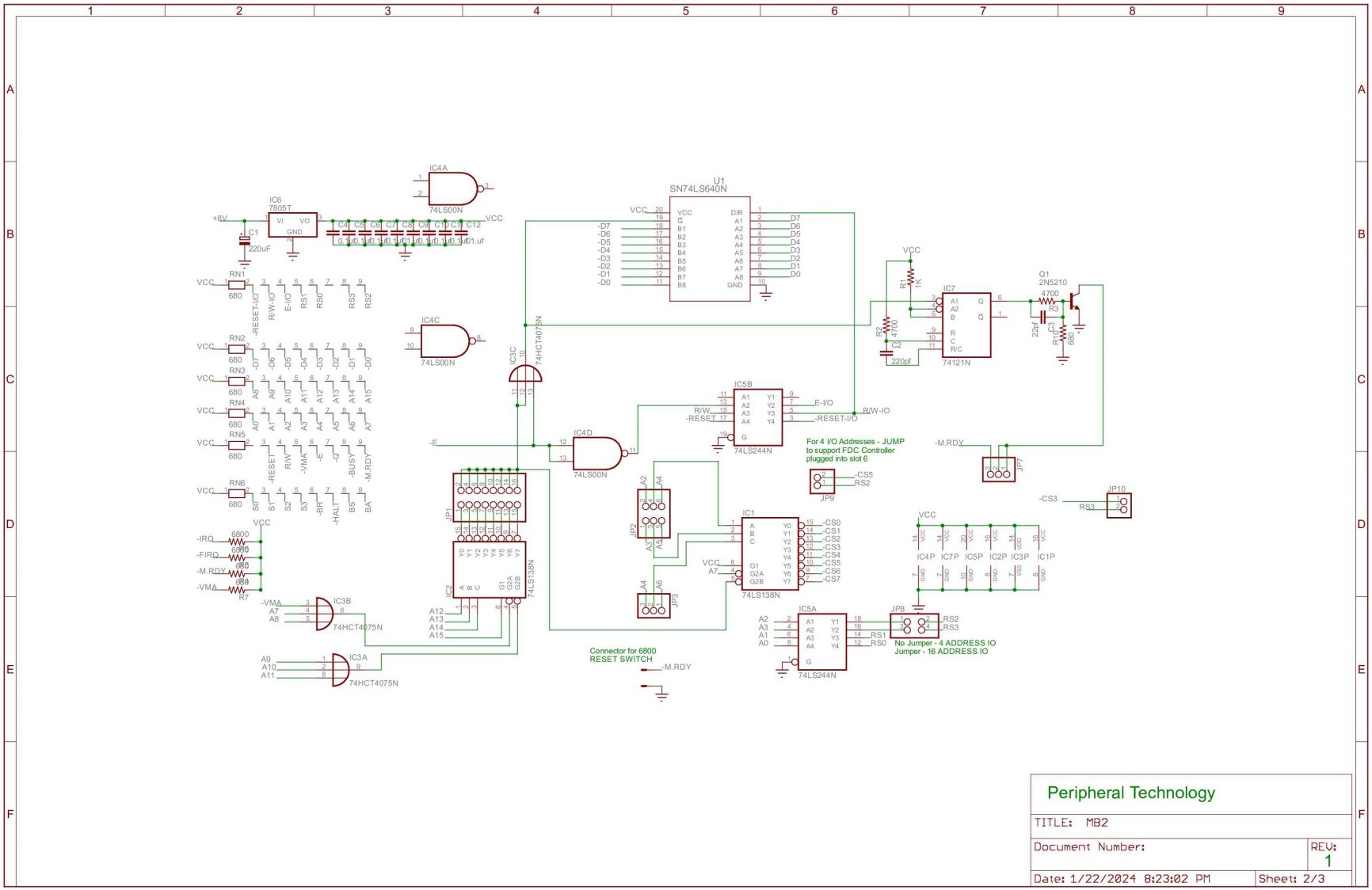

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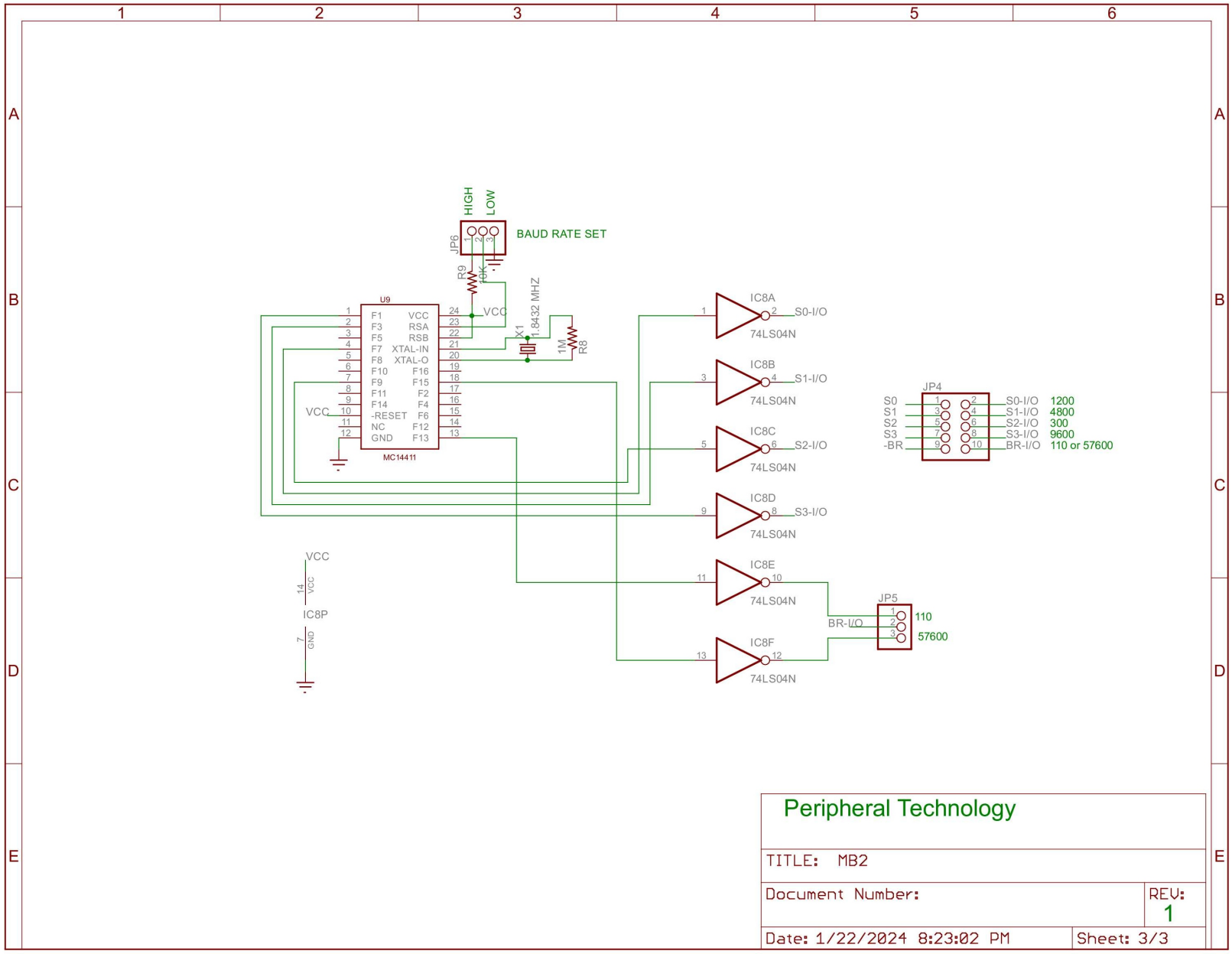

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